

## ABSTRACT

An off-board communications system (50) for railway communications to and from a locomotive (10) and a central station (18). A radio (56) utilizes multiple antennas (52, 54) to broadcast a transmission signal (62, 64) over parallel communications paths so to insure that a data sent from a locomotive (10) is complete. In one embodiment, the antennas (52, 54) are selected to broadcast signals as a function of signal magnitude and phase weighting so to optimize transmissions directed at a remotely located receiver (42). In another embodiment, antennas (92, 94) broadcast at different frequencies, and with different modulation and broadcast protocols. A signal divider (74) such as a multiplexer divides the signal prior to transmission, and a signal recombining unit (84) recombines transmitted signals (80, 82) at the receiving site. A performance/availability checker is employed to monitor transmission integrity.

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